

*CLAIM AMENDMENTS*

1. (Currently Amended) A current supply circuit ~~(100)~~ providing an output current corresponding to digital data ~~(D0-D5)~~ of n bits (wherein n is an integer not less than 2), comprising:

a current driving device;

a current output node ~~(DL)~~ electrically connected ~~with~~ to a first power supply node ~~(11)~~ via a said current driving device ~~(23)~~ during current supply;

a current control circuit ~~(110)~~ provided between a second power supply node ~~(12)~~ and said current output node and receiving ~~said~~ digital data ~~for controlling~~, corresponding to ~~said~~ the digital data, an amount of for controlling current on flowing in a current path established, including said current output node, between ~~said~~ the first and second power supply nodes during ~~said the~~ current supply; and

a voltage regulating circuit ~~(140, 150)~~ receiving ~~said the~~ digital data for forcing, after ~~said the~~ current supply starts, a change in voltage on said current output node based on ~~said the~~ digital data.

2. (Currently Amended) The current supply circuit according to claim 1, wherein said current driving device includes a field effect transistor ~~(23)~~ having a source and a drain electrically connected ~~with said~~ to the first power supply node ~~(11)~~ and said current output node ~~(DL)~~, respectively, and a gate, and the gate and drain of said field effect transistor are electrically connected during ~~said the~~ current supply.

3. (Currently Amended) The current supply circuit according to claim 1, wherein, during ~~said the~~ current supply, the voltage on said current output node ~~(DL)~~ settles to a steady voltage ~~(V<sub>st</sub>)~~ corresponding to a level of ~~said the~~ output current depending on characteristics of said current driving device ~~(23)~~, and

said voltage regulating circuit ~~(140, 150)~~ exchanges electric charge with said current output node ~~(DL)~~ to move the voltage on said current output node closer to ~~said the~~ steady voltage depending on ~~said the~~ digital data ~~(D0-D5)~~.

4. (Currently Amended) The current supply circuit according to claim 1, wherein said voltage regulating circuit ~~(140, 150)~~ includes:

a precharge circuit ~~(140)~~ precharging, prior to supply of ~~said the~~ output current, said current output node ~~(DL)~~ to a predetermined voltage ~~(V<sub>bf</sub>)~~; and

a precharge regulating circuit (~~150~~) exchanging, from initiation of ~~said the~~ current supply onward, electric charge corresponding to ~~said the~~ digital data (~~D0-D5~~) with said current output node.

5. (Currently Amended) The current supply circuit according to claim 4, wherein said precharge regulating circuit (~~150~~) includes n regulating units ~~provided~~ corresponding to the respective n bits (~~D0-D5~~) of ~~said the~~ digital data, and said n regulating units include:

n respective ~~n~~ capacitors (~~C0-C5~~) charged by respective first to n-th voltages (~~V0-V5~~) prior to the supply of ~~said the~~ output current; and

n respective ~~n~~ switching devices (~~170-175~~) provided between said n respective ~~n~~ capacitors and said current output node (~~DL~~), and each of said n switches turns on or off depending on one corresponding bit of ~~said the~~ digital data during ~~said the~~ current supply.

6. (Currently Amended) The current supply circuit according to claim 5, wherein, during ~~said the~~ current supply, the voltage on said current output node (~~DL~~) settles to a constant voltage (~~V<sub>st</sub>~~) corresponding to a level of ~~said the~~ output current depending on characteristics of said current driving device (~~23~~), and

~~said the~~ predetermined voltage (~~V<sub>st</sub>~~), ~~said the~~ first to n-th voltages, (~~V0-V5~~) and capacitances (~~C0-C5~~) of said n capacitors are designed, for each of at least one of the combinations of the n bits of ~~said the~~ digital data, based on a conservation of charge that reflects ~~said the~~ constant voltage between before and after at least one of said n switching devices (~~170-175~~), corresponding to ~~said the~~ n bits, is turned on.

7. (Currently Amended) The current supply circuit according to claim 1, wherein said current control circuit (~~110~~) includes n constant-current supplies (~~120-125~~) ~~provided~~ corresponding to the respective n bits (~~D0-D5~~) of ~~said the~~ digital data and connected in parallel to said current output node (~~DL~~), and

said n constant-current supplies generate, corresponding to ~~said the~~ n respective ~~n~~ bits, first to n-th currents (~~I1, I2, I4, I8, I32~~) between ~~said the~~ second power supply node (~~12~~) and said current output node.

8. (Currently Amended) The current supply circuit according to claim 7, wherein ~~said the~~ first to n-th currents (~~I1, I2, I4, I8, I32~~) are set in gradations in a power of 2

corresponding to a predetermined ~~weighing~~ weighting of the n bits ~~(D0-D5)~~ of ~~said the~~ digital data.

9. (Currently Amended) A current supply circuit ~~(100#)~~ providing an output current corresponding to digital data ~~(D0-D5)~~ of n bits (wherein n is an integer not less than 2), comprising:

a current driving device;

a current output node ~~(DL)~~ electrically connected to a first power supply node ~~(11)~~ via ~~a said~~ current driving device ~~(23)~~ during current supply;

a current control circuit ~~(110)~~ provided between a second power supply node ~~(12)~~ and said current output node and receiving ~~said~~ digital data ~~for controlling~~, corresponding to ~~said the~~ digital data, ~~an amount of~~ for controlling current on flowing in a current path ~~established~~, including said current ~~data line~~ output node, between ~~said the~~ first and second power supply nodes during ~~said the~~ current supply; and

a voltage regulating circuit ~~(140, 150)~~ receiving ~~said the~~ digital data for moving, prior to ~~said the~~ current supply, a voltage on said current output node closer to a voltage corresponding to ~~said the~~ digital data.

10. (Currently Amended) The current supply circuit according to claim 9, wherein, during ~~said the~~ current supply, the voltage on said current output node ~~(DL)~~ settles to a steady voltage ~~(Vst)~~ corresponding to a level of ~~said the~~ output current depending on characteristics of said current driving device ~~(23)~~, and

said voltage regulating circuit ~~(140, 150)~~ includes:

a precharge circuit ~~(140)~~ precharging, during a first period ~~(t0-ta)~~, said current output node to a predetermined voltage ~~(Vbf)~~; and

a precharge regulating circuit exchanging, during a second period ~~(ta-t1)~~, following ~~said the~~ first period, electric charge corresponding to ~~said the~~ digital data ~~(D0-D5)~~ with said current output node to move the voltage on said current output node ~~(DL)~~ closer to ~~said the~~ steady voltage.

11. (Currently Amended) A display device ~~(10)~~ performing producing a gray-scale display corresponding to image data ~~(D0-D5)~~ of n bits (wherein n is an integer not less than 2), comprising:

a current supply circuit ~~(100)~~ for supplying a display current corresponding to ~~said the~~ image data;

a plurality of pixel circuits ~~(20)~~, each pixel circuit including a current-driven light-emitting device ~~(21)~~ providing a brightness corresponding to a supplied current and a pixel driving circuit ~~(22)~~ for supplying said current-driven light-emitting device with a current corresponding to ~~said the~~ display current; and

a current data line ~~(DL)~~ for conveying ~~said the~~ display current, which is provided by said current supply circuit, to said plurality of pixel circuits, wherein

said pixel driving circuit has a current driving device ~~(23)~~ connected between said current data line and a first power supply node ~~(11)~~ during a predetermined period in which ~~said the~~ display current is conveyed thereto, and supplies said current-driven light-emitting device with a current corresponding to ~~said the~~ display current conveyed during the predetermined period, and

said current supply circuit includes:

a current control circuit ~~(110)~~ provided between a second power supply node ~~(12)~~ and said current data line and receiving ~~said the~~ image data for controlling, corresponding to ~~said the~~ image data, ~~an amount of current on~~ flowing in a current path ~~established~~, including said current data line, between said first and second power supply nodes during supply of said display current; and

a voltage regulating circuit ~~(140, 150)~~ receiving said image data for forcing, after supply of said display current starts, a change in voltage on said current data line based on said image data.

12. (Currently Amended) The display device according to claim 11, wherein said current control circuit ~~(110)~~ includes  $n$  constant-current supplies ~~(120-125)~~ ~~provided~~ corresponding to the  $n$  respective  $n$  bits ~~(D0-D5)~~ of ~~said the~~ image data and connected in parallel to said current data line, and

said  $n$  constant-current supplies generate first to  $n$ -th currents ~~(I1, I2, I4, I8, I16, I32)~~ on said current data line based on ~~said the~~  $n$  respective  $n$  bits.

13. (Currently Amended) The display device according to claim 11, wherein, during the supply of ~~said the~~ display current, the voltage on said current data line ~~(DL)~~ settles to a steady voltage ~~(Vst)~~ corresponding to a level of ~~said the~~ display current depending on characteristics of said current driving device ~~(23)~~, and

said voltage regulating circuit ~~(140, 150)~~ includes:

a precharge circuit ~~(140)~~ precharging, prior to the supply of ~~said the~~ display current, said current data line to a predetermined voltage ~~(Vb)~~; and

a precharge regulating circuit ~~(150)~~ exchanging, from initiation of the supply of ~~said the~~ display current onward, electric charge corresponding to ~~said the~~ image data with said current data line to move the voltage on said current data line closer to ~~said the~~ steady current.

14. (Currently Amended) The display device according to claim 13, wherein said precharge regulating circuit ~~(150)~~ includes n precharge regulating units ~~provided~~ corresponding to the n respective ~~n~~ bits ~~(D0-D5)~~ of ~~said the~~ image data, and said n precharge regulating units include:

n respective ~~n~~ capacitors ~~(C0-C5)~~ charged by respective first to n-th voltages ~~(V0-V5)~~ prior to the supply of ~~said the~~ display current; and

n respective ~~n~~ switching devices ~~(170-175)~~ provided between said n respective ~~n~~ capacitors and said current data line ~~(DL)~~, and each of said n switches turns on or off depending on one corresponding bit of ~~said the~~ image data during the supply of ~~said the~~ display current.